

**(19) World Intellectual Property
Organization
International Bureau**



(43) International Publication Date
8 July 2004 (08.07.2004)

PCT

(10) International Publication Number
WO 2004/057153 A1

- (51) **International Patent Classification⁷:** **E21B 43/12**

(21) **International Application Number:**
PCT/NO2003/000423

(22) **International Filing Date:**
17 December 2003 (17.12.2003)

(25) **Filing Language:** English

(26) **Publication Language:** English

(30) **Priority Data:**
20026229 23 December 2002 (23.12.2002) NO

(71) **Applicant (for all designated States except US):** **NORSK HYDRO ASA** [NO/NO]; N-0204 Oslo (NO).

(72) **Inventors; and**

(75) **Inventors/Applicants (for US only):** **AARVIK, Asbjørn** [NO/NO]; Grindbakken 38, N-0764 Oslo (NO). **UV, Egil, Henrik** [NO/NO]; Skipanesv. 30, N-5259 Hjellestad (NO).

(74) **Agent:** **JOHNSEN, Venche, Høines;** Norsk Hydro ASA, N-0240 Oslo (NO).

(81) **Designated States (national):** AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) **Designated States (regional):** ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

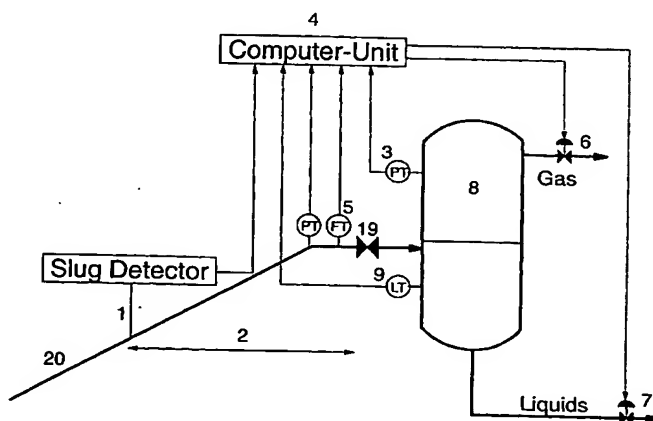
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

- (54) Title: A SYSTEM AND A METHOD FOR PREDICTION AND TREATMENT OF SLUGS BEING FORMED IN A FLOW LINE OR WELLBORE TUBING**



(57) Abstract: The present invention relates to a system and a method for prediction and treatment of all kinds of slugs being formed in a flow line (20) system or wellbore tubing transporting a multiphase fluid towards a downstream process including a separator or a slug catcher at said process inlet. Said system comprises a slug detector (1) located downstream of the point for slug initiation and upstream of said process and a computer unit (4) integrating said flow line system and said downstream process including software which determines the type of the slug, its volume and predicts its arrival time into said downstream process. Said computer unit processes all its incoming data to obtain an optimum regulation of said process so that process perturbations due to incoming slugs are reduced to a minimum through said process.

WO 2004/057153 A1